UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,012	03/22/2001	Hironori Dobashi	PW 0279262 T4HT-00S1067-1	2985

909 7590 05/06/2004		EXAMINER
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ART UNIT	PAPER NUMBER
2625	

MCLEAN, VA 22102

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) *13-25 and 33-39* is/are withdrawn from consideration.

5)☒ Claim(s) *26-32* is/are allowed.

6)☒ Claim(s) *1-2,4-7,11,13-25* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>5</u>.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.   Applicant's election of claims 1-12 and 26-33 in Paper No. 8 is acknowledged.

Because applicant did not distinctly and specifically point out the supposed errors in the

restriction requirement, the election has been treated as an election without traverse

(MPEP § 818.03(a)).

Priority

2.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Drawings

3.   Drawings filed on 3/22/01 have been approved by the examiner.

Specification

4.   The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed.

The following title is suggested:

"Facial image recognition apparatus".

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims 1-2 and 4-7 are rejected under 35 U.S.C. 103 (a) as being unpatentable

over Kado et al. (hereinafter referred to as Kado) (6,181,806 B1) in view of Salganicoff

et al. (hereinafter referred to as Salganicoff) (US 6,055,322).

For claim 1, Kado discloses a facial image recognition apparatus (figure 2)

comprising;

a camera (figures 1-2, image input section uses TV camera 1) for photographing

a facial image of the human recognition object ;

a feature value extraction section (sections 13 in figure 2 is a feature points

extraction section and section 14 is a feature amount extraction section) for extracting a

feature value of the face of the human recognition object from a facial image

photographed by the camera, and

a recognition section (judgment section 18 compares the extracted feature

amounts with the feature amounts of persons prepared in a personal database 17) in

figure 2 for collating the feature value extracted by the feature value extraction section

with a standard feature value registered in advance (17) so as to recognize a facial

image of the human recognition object.

Kado differs from claim 1, in that he does not clearly disclose the use of a

plurality of illuminations radiating light toward the face of a human. However, he does

provide the correction of brightness by adjusting the position of a light source as

mention in figure 14 and explained in column 7, lines 28-53. In an analogous art,

Salganicoff disclose a system of identify individuals from facial images and more

particularly from images of the eye using a multiple illuminations 2 and 4 as shown in

figure 1 and explained throughout the disclosure (for example see column 4, lines 7-16).

Salganicoff further explains that these illuminations are used to minimize the effect of

ambient illumination and sunlight (see column 4, lines 25-55). Therefore, it would have

been obvious to one of ordinary skill in the art to modify Kado to incorporate the use of a

plurality of illuminations radiating light toward the face of a human recognition object. It

would have been obvious to one of ordinary skill in the art at the time of the invention to

have modified Kado by the teachings of Salganicoff in order to minimize the effect of the

ambient illumination and sunlight as mentioned by Salganicoff in column 4 lines 25-35,

45-54.

For claim 2, while Kado discloses the facial image recognition apparatus as set

forth in claim 1 but he is silent about use of the plurality of illuminations are composed of

a first illumination for radiating light toward the face of the human recognition object and

a second illumination for radiating light toward the face of the human recognition object,

said first illumination is installed in an upper right diagonal part, an upper left diagonal

part, a front right diagonal part, or a front left diagonal part of the camera, taken in the

direction that the human recognition object looks, and said second illumination is

installed below the camera. But Salganicoff discloses these missing features at least as described at column 4, lines 7-16. The motivation for doing this is described above in claim 1.

For claim 4, Salganicoff discloses the facial image recognition apparatus as set forth in claim 2, wherein the total value of the illuminance of the light radiated from the first illumination and the illuminance of the light radiated from the second illumination is greater than the illuminance of the light other than the light from the first and second illuminations radiated to the human recognition object (column 4, lines 25-35).

For claim 5, Kado discloses the facial image recognition apparatus as set forth in claim 1, further comprising an information input section for inputting information related to the human recognition object (2), wherein the recognition section (18) searches a feature value corresponding to the information inputted by the information input section from the standard feature value registered in advance (17) and collates (18) the searched feature value with the feature value extracted by the feature value extraction section so as to recognize a facial image of the human recognition object.

For claim 6, Salganicoff discloses the facial image -recognition apparatus as set forth in claim 1, further comprising an outer light interruption section for interrupting light other than the light from the plurality of illuminations radiated to a facial part of the human recognition object 9column 4, lines 25-55).

For claim 7, Kado discloses the facial image recognition apparatus as set forth in claim 1, further comprising a display section (figure 1, section 5) for displaying the

facial image photographed by the camera and displaying information showing an

appropriate size of a facial image.

5.   **Claim 11** is rejected under 35 U.S.C. 103 9a) as being unpatentable over Koike

et al. (herein after referred to as Koike) (US 6,181,805 B1) in view of Salganicoff et al.

(hereinafter referred to as Salganicoff) (US 6,055,322).

      For claim 11, Koike et al. disclose a facial image recognition apparatus (figure 1)

comprising a facial image registration section for performing registration processing of a

facial image (100 in figure 1 provides a registration section) and a facial image

recognition section (sections 105, 106, 107, 107A, 108, 109 provide a recognition

section) connected to the facial image registration section to perform recognition

processing of a facial image, a first camera (101) for photographing a facial image of

the human registration object, a first feature value extraction section (102) for extracting

a feature value of the face of the human registration object (M1, M2, M3 in figure 1)

from a facial image photographed by the first camera (101) , and a memory section

(104) for storing a feature value extracted by the first feature value extraction section as

a standard feature value, and

      the facial image recognition section comprises, a second camera (105) for

photographing a facial image of the human recognition object, a second feature value

extraction section (106) for extracting a feature value of the face of the human

recognition object from a facial image photographed by the second camera, and a

recognition section (107, 109) for collating a feature value extracted by the second

feature value extraction section with a feature value stored in the memory section of the

facial image registration section so as to recognize a facial image of the human

recognition object.

Koike differs from claim 1, in that he does not clearly disclose the use of a

plurality of illuminations radiating light toward the face of a human. However, he does

provide the correction of brightness by adjusting the position of a light source as

mention in figure 14 and explained in column 7, lines 28-53. In an analogous art,

Salganicoff disclose a system of identify individuals from facial images and more

particularly from images of the eye using a multiple illuminations 2 and 4 as shown in

figure 1 and explained throughout the disclosure (for example see column 4, lines 7-16).

Salganicoff further explains that these illuminations are used to minimize the effect of

ambient illumination and sunlight (see column 4, lines 25-55). Therefore, it would have

been obvious to one of ordinary skill in the art to modify Koike to incorporate the use of

a plurality of illuminations radiating light toward the face of a human recognition object.

It would have been obvious to one of ordinary skill in the art at the time of the invention

to have modified Koike by the teachings of Salganicoff in order to minimize the effect of

the ambient illumination and sunlight as mentioned by Salganicoff in column 4 lines 25-

35, 45-54.

Allowable Subject Matter

6.   **Claims 3, 8-10 and 12** are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

For claim 3, the prior art on record fails to teach or suggest, alone or in combination, the facial image recognition apparatus wherein the illuminance of the light radiated from the first illumination is greater than that of the light radiated from the second illumination.

For claim 8, the prior art on record fails to teach or suggest, alone or in combination, the facial image recognition apparatus wherein the first illumination is installed in a front right diagonal part or a front left diagonal part of the camera, taken in the direction that the human recognition object looks, and the camera is installed below a position of the face of the human recognition object so as to photograph a facial image of the human recognition object in an upward direction.

For claim 9, the prior art on record fails to teach or suggest, alone or in combination, the facial image recognition apparatus wherein the plurality of illuminations sequentially operate in a predetermined order and time interval, the camera photographs facial images of the human recognition object one after another by synchronizing sequential operations of the plurality of illuminations, the feature value extraction section extracts feature values of the face of the human recognition object from a plurality of facial images sequentially inputted from the camera, respectively, and the recognition section collates a plurality of feature values extracted by the feature value extraction section with a standard feature value registered in advance, respectively, so as to recognize a facial image of the human recognition object.

For claim 10, this claim depends from the objected claim 9, therefore it is objected for the same reasons.

For claim 12, the prior art on record fails to teach or suggest, alone or in combination, the facial image recognition apparatus wherein the facial image registration section further comprises a first display section for displaying a facial image photographed by the first camera, and the facial image recognition section further comprises a second display section for displaying a facial image photographed by the second camera.

Claims 26-32 are allowed.

For independent claim 26, the prior art on record fails to teach or suggest, alone or in combination, for a facial image recognition apparatus comprising a camera installed so that a human recognition object positions oneself on a floor face having at least one or more differences in elevation and photographing a facial image of the human recognition object positioning oneself on a floor face of a height according to the height of the human recognition object.

Other prior art cited

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yamamoto (US 6,718,050 B1) discloses a face-image processing apparatus.

Funada (US 6,516,247 B2) discloses robot, identifying environment determining method, and program thereof.

Nagao et al. (US 6,628,811 B1) disclose a method and apparatus for recognizing image pattern, method and apparatus for judging identity of image patterns, recording

medium for recording the pattern recognizing method and recording medium for

recording the pattern identity judging method.

Salganicoff et al. (US 6,055,322) disclose a method and apparatus for

illuminating and imaging eyes through eyeglasses using multiple sources of illumination.

Zheng et al. (US 6,701,026 B1) disclose a method and apparatus for canceling

lighting variations in object recognition.

Barber (US 6,507,361 B1) discloses an electronic personalized imaging

production system including means for combining foreground images with background

images.

Kakii (US 5,815,197) discloses a two-way interactive system, terminal equipment

and image pickup apparatus having mechanism for matching lines of sight between

interlocutors through transmission means.

Flom et al. (US 4,641,349) disclose an iris recognition system.

Wildes et al. (US 5,572,596) disclose an automated, non-invasive iris recognition

system and method.

Contact information

8.   Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to **Kanji Patel** whose telephone number is (703) 305

4011. The examiner can normally be reached on Monday through Friday from 8:00 a.m.

to 6:30 p.m. Friday off. If attempts to reach the examiner by phone are unsuccessful,

the examiner's supervisor, **Mehta , Bhavesh**, can be reached on (703) 308-

5246. Any inquiry of general nature or relating to the status of this application should be

directed to the **Group receptionist** whose telephone number is (703) 305-3800. The

Fax number for this group is (703) 872-9306.

Kanji Patel
Patent Examiner
Group Art Unit2625
April 30, 2004